

Notice of Allowability

Application No.

10/724,472

Examiner

Shawn Gu

Applicant(s)

KLEIN, DEAN A.

Art Unit

2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 13 March 2006 and the telephonic interview on 23 June 2006.
2. ☒ The allowed claim(s) is/are 1,3-14,16-21,23-33,36-44 and 46-53.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 3/13/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20060622.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 13 March 2006 was filed after the mailing date of the application on 26 November 2003. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the Examiner.

EXAMINER'S AMENDMENT

2. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this Examiner's amendment was given in a telephone interview with Christian Fox (REG #: 58507) on 23 June 2006.

3. Amendment in claim 1:
on line 5, change "amount" to "amount in a single processor cycle";
on line 10, change "." to ",";

Art Unit: 2189

4. Add in claim 1, after line 10:

storing in a register data shifted out of the cache line during the shift operation;
reading from the data cache a second cache line containing at least a portion of
the data string;
shifting the second cache line said selected amount;
filling the shifted second cache line with the data stored in the register during said
shifting; and
storing the shifted second cache line in a second destination cache line in the
data cache.

5. Cancel claim 2.

6. Amendment in claim 3:

on line 1, change "method of Claim 2" to "method of Claim 1".

7. Amendment in claim 12:

on line 10, change "storing data" to "storing all of the data".

8. Amendment in claim 21:

on line 7, change "said shift operation" to "said shifting".

9. Rewrite claim 32 as:

32. The method of Claim 21, wherein the acts of reading, shifting and storing are pipelined.

10. Amendment in claim 33:

on line 6, change "storing data" to "storing all of the data".

11. Amendment in claim 42:

on line 4, change "amount" to "amount in a single processor cycle";

on line 5, change "storing data" to "storing all of the data", and change "cache line" to "cache line during the said shifting".

STATEMENT OF REASONS FOR ALLOWANCE

12. The following is an examiner's statement of reasons for allowance:

Per claim 42, Groves teaches a processor (Fig 1) comprising:

a cache memory, means for reading a cache line from the cache memory (Fig 1, Memory 20; Col 3, Line 68; Col 4, Line 1);

means for shifting the cache line a selected amount (Col 6, Lines 3-30);

means for storing data shifted out of the cache line (Fig 2C, Memory Bus 18B and Byte Rotate 22B; Col 6, Lines 12-30; a rotator stores data shifted out of one end back to the other end).

Groves in further view of Pogue further teaches shifting the cache line a selected amount in a single processor cycle as described in the first Office action in its rejection of claims 12 and 33.

However, Groves' storing means for storing data shifted out of the cache line is a register (Fig 1, Register 56) whose full capacity is the same as the size of the cache line. It is possible to argue that Groves' register could be split into multiple smaller registers to increase the system's flexibility and to reduce wasted storage resources if the stored data does not take up the entire storage capacity of Register 56. Yet the claim is further amended to limit the storing means to store all of the data shifted out of the cache line during shifting while still having a full storage capacity that is less than the size of the cache line. Groves in view of the Pogue or any other prior art reference discovered by the Examiner does not anticipate this limitation.

Claims 12 and 33 are allowable due to at least the same reason presented above for claim 42. Claims 1, 21 and 52 are allowable since previously indicated allowable subject matters having been included into the claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

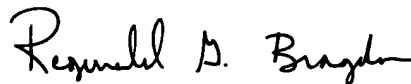
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn Gu whose telephone number is (571) 272-0703. The examiner can normally be reached on 9am-5pm, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Patent Examiner
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REGINALD B. BRAGDON
PATENT EXAMINER

23 June 2006